REMARKS

Claims 1-2, 4-7, 9-23, 25 and 27 are pending in the present application. In the above amendments, claims 1 and 18-21 have been amended. Therefore, after entry of the above amendments, claims 1-2, 4-7, 9-23, 25 and 27 will be pending in this application. Applicants believe that the present application is now in condition for allowance, which prompt and favorable action is respectfully requested.

Drawings

On page 2, item 2, of the Action, the Examiner objects to the drawings as failing to comply with 37 CFR 1.84(p)(4) because different reference characters are used to designate a common element. Therefore, reference numerals 12, 52, 62 and 72 of Fig. 4 have been changed to 10, 50, 60 and 70, respectively, on the corrected drawing sheet attached hereto. As a result, the objection is respectfully overcome and should be withdrawn. Approval of amended Fig. 4 is respectfully requested.

On page 3, item 3, of the Action, the Examiner objects to the drawings, as failing to comply with 37 CFR 1.84(a), stating that the drawings fail to show the modifying, deriving and determining, as recited in claim 1.

According to the embodiment illustrated in Fig. 4, for example, when chips are known to contain more reliable information, the chip slicer decisions may be selectively fed back to the slicer 60 to improve reliability of further slicer decisions. Once the slicer 60 has provided more reliable information, this information can be stored in the tap contents of the feedback filter 70 and the known correlation between the chips in the code word can be exploited to modify the older tap contents in the feedback filter 70 based on the more reliable information. For example, after slicing each of the chips and placing them into the first tap contents of the feedback filter 70, the older tap contents of the feedback filter 70 can be replaced with more reliable values (i.e.,

modifying a previous chip slice decision). The tap contents are appropriately mixed and combined to create the new estimate to be fed to the chip slicer 60 (i.e., deriving a more accurate estimate). Advantageously, this process ensures that the contents of feedback filter 70 will reflect the increased accuracy of the modified slicer input, thereby decreasing DFE 10 error propagation. (See also Fig. 5, which shows a diagram illustrating improved feedback filter contents). As a result, more reliable symbol estimates can be used to replace older content in the feed back filter to further improve the accuracy of the modified slicer input (i.e., estimating the encoded symbol based on the more accurate estimate for the sliced chip).

As shown in Fig. 4, the loop created by signal combiner 50, chip slicer 60 and feedback filter 70 illustrates, as an example, that after several loops (i.e., after several chips have been processed), the tap contents in the feedback filter 70 will be based on more accurate slicer input. (See paragraph [0050] and the equations for k loops from 1 to 8 shown in paragraphs [0046]-[0049]).

Therefore, it is submitted that the features of modifying, deriving and determining are clearly depicted in the Drawings (Figs. 4 and 5, for example) described above, as explained in their corresponding written description and in light of the corresponding equations. As a result, Applicants respectfully request withdrawal of the objection to the drawings.

Specification

The Specification has been amended to reflect the changes to Fig. 4 described above. Specifically, paragraphs [0042], [0043], [0044] and [0050] are amended herein to change reference numerals 12, 52, 62 and 72 to 10, 50, 60 and 70, respectively, corresponding to the changes to Fig. 4. Approval of the amended specification is respectfully requested.

Claim Objections

On page 4, item 4, of the Action, claims 1, 2, 4-7 and 18-21 are objected to for various informalities. Regarding independent claim 1, the Examiner states that the recitation "removing interference from the sliced chip" and "modifying a previous chip slice decision" are not connected to subsequent features recited in the claim. Similar objections are raised regarding independent claim 18.

Independent claim 1 is amended herein for further clarification. Specifically, independent claim 1 is amended herein to recite "deriving a more accurate estimate for the sliced chip based on **the removing, modifying** and a correlation among the plurality of chips in the code word" (emphasis added). (See paragraphs [0043]-[0044] of the present specification for support). It is noted that independent claim 18 as amended herein recites features substantially similar to those described above for independent claim 1.

The Examiner also objects to independent claim 1 since line 12 recites "determining an updated estimate of the encoded signal", while there is no previous feature of estimating an encoded signal. Independent claim 1 is amended herein to recite estimating the encoded symbol based on the more accurate estimate for the sliced chip. It is submitted that this feature of claim 1, as amended, is sufficiently clear without a previous feature of estimating.

Finally, the Examiner objects to claims 19-21, which have been amended herein to correct the noted informalities.

Therefore, it is respectfully submitted, in light of the foregoing remarks and amendments, that the objections are hereby overcome and should be withdrawn.

Claim Rejections – 35 USC § 112

On pages 4-6 of the Action, claims 1, 2, 4-7, 9-13, 18-23, 25 and 27 are rejected under 35 USC § 112, first paragraph, as failing to comply with the written description requirement.

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Specifically, regarding independent claims 1, the Examiner states that the features of modifying, deriving and determining are not supported by the specification.

Applicants direct the Examiner to paragraph [0043] and [0044] of the present specification, which states that once the slicer has provided more reliable information, this information can be stored in the tap contents of the feedback filter and the known correlation between the chips in the code word can be exploited to modify the older tap contents in the feedback filter based on the more reliable information.

For example after slicing each of the chips and placing them into the first tap contents of the feedback filter, the older tap contents of the feedback filter can be replaced with more reliable values (i.e., modifying a previous chip slice decision). The tap contents are appropriately mixed and combined to create the new estimate to be fed to the chip slicer (i.e., deriving a more accurate estimate). Advantageously, this process ensures that the contents of feedback filter will reflect the increased accuracy of the modified slicer input, thereby decreasing DFE error propagation. (See also, Fig. 4 and Fig. 5, which shows a diagram illustrating improved feedback filter contents). As a result, more reliable symbol estimates can be used to replace older content in the feedback filter to further improve the accuracy of the modified slicer input (i.e., estimating the encoded symbol based on the more accurate estimate for the sliced chip). (Abstract and Fig. 3, showing an example graph diagram illustrating a reduced amount of slicer errors based on improved symbol estimates).

Applicant respectfully submit that the foregoing description, as well as the corresponding drawings, clearly supports the recited features of independent claim 1. As a result, the rejection thereof should be withdrawn.

Regarding claims 9 and 10, the Examiner states that the original disclosure does not support "one or more" chip decisions output from the slicer, or "one or more" content registers, respectively.

Regarding claim 9, paragraph [0027] of the specification states that chip slicer 60 is configured to extract a portion of the data stream corresponding to a chip. The chip is provided to the feed back filter 70, where the sliced chip is processed to determine any noise associated with the slicer decision. The feed back filter 70 advantageously feeds the noise component back to chip slicer 60. In this fashion, the noise component can be subtracted from next incoming signals from the feed forward filter 40.

As described by this portion of the written description, after one chip slice decision is made, a noise component may be fed back to the chip slicer 60 (i.e., to use for subsequent chip slice decisions). Therefore, embodiments of the present invention, as recited in claim 9, do not require the output of more than one chip slicer decision from the slicer in order to determine a noise component.

As originally presented, claim 10 recited that **one or more** content registers are updated with more accurate symbol estimates during decision directed updating. As part of the original disclosure, original claim 10 is sufficient support for this feature. Further, one skilled in the art would clearly understand that one content register may be updated at any particular time. For example, if a single chip is sent from the chip slicer, for example, then one content register may be updated accordingly. Thus, embodiments of the present invention are not limited to **updating** a plurality of content registers, even though Fig. 4 illustrates an example of a system where a plurality of update registers may exist.

Regarding claim 18, the Examiner states that the recitation, "means for removing interference from the sliced chip based on the sliced chip and a previous sliced chip modified

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based on a correlation of the sliced chip with the previous sliced chip" is not supported by the original disclosure.

As noted above, according to paragraphs [0027], [0043] and [0044], a noise component is provided from feedback filter 70, which receives the sliced chip from chip slicer 60, and may hold previous chip slicer decisions in tap content registers, which may be modified after each chip slicer decision. Based at least in part on these modified chip slicer decisions and a sliced chip, a noise component is output from feedback filter 70. Thus, the above-mentioned portions of the written description, and the accompanying figures, clearly support the features of claim 18, provided above.

Similarly, regarding claim 22, the Examiner states that the recitation, "determining a noise component based at least in part in the sliced chip and the modified previous chip decision" is not supported by the original disclosure.

As provided above regarding claim 18, the above-mentioned portions of the written description, and the accompanying figures, clearly support the aforementioned features of claim 22.

Regarding claims 25 and 27, the Examiner states that there is no support for the recitation, "a feedback filter comprising a plurality of content registers and configured to receive the chip slicer decision". The Examiner goes on to note that "the specification teaches that the registers [are] set to receive chip slicer **decisions**."

However, claims 25 and 27 recite that the **feedback filter** is configured to receive the chip slicer **decision**, as opposed to **content registers** configured to receiver the chip slicer decision, as the Examiner states. As shown in Fig. 4, for example, the feedback filter 70 receives the chip slicer **decision** from chip slicer 60, according to the embodiment illustrated therein.

Therefore, in light of the foregoing, it is respectfully submitted that the rejections under 35 USC § 112 of the claims discussed above, as well as the claims depending therefrom, are overcome and should be withdrawn.

Allowable Subject Matter

As noted on page 6 of the Action, claims 14-17 are allowed.

CONCLUSION

In light of the amendments contained herein, Applicants submit that the application is in condition for allowance, for which early action is requested.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

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